number of patients, especially in the surgical group (n = 13).

Exclusion of patients with cancer at the time of pulmonary embolism, however, is more complicated than performing a Kaplan-Meier survival analysis with fewer patients at follow-up. There are several different types of cancer, of course, and the survival and prognosis are influenced not only by the type of cancer (Hodgkin lymphoma vs pancreatic cancer for example) but also by the staging (localized vs metastatic), the overall condition of the patient, and the patient's age. We agree with McGuire and Rubens that a patient with metastatic cancer will likely have a very poor prognosis and probably should not undergo aggressive surgery for pulmonary embolism, and this is an assessment that should be performed by the surgeon, the patient, and the family at the bedside. If, however, a patient has a history of cancer that has been treated successfully with surgery, chemotherapy, or radiation therapy and as a result has a meaningful survival (>1 year), then surgery for pulmonary embolism should be carefully considered. In general, for patients with known diagnosis of cancer at the time of pulmonary embolism, our practice is to consult our medical oncology colleagues, when patient stability makes this feasible, to give us an assessment of the estimated survival. If survival is estimated at greater than 1 year, we consider pulmonary embolism surgery and go over this with the patient and family.

Marzia Leacche, MD
John G. Byrne, MD
Vanderbilt Heart & Vascular Institute
Nashville, Tenn

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THE PARACHUTE TECHNIQUE FOR ANTERIOR LEAFLET PROLAPSE

To the Editor:

The publication by Zannis and colleagues[1] highlights the critically important new surgical approach for the treatment of anterior leaflet prolapse. Konstantinos and colleagues performed the parachute technique on 44 consecutive patients.[1] Echocardiographic examination was performed in all patients to measure the distance from the tip of each papillary muscle to the annular plane at end systole in an apical view. Constructing the parachute according to the described distance may cause the persistence of prolapse because there must be coaptation depth between the anterior and posterior leaflets.[2] The coaptation depth is approximately 4 mm in the anterior and posterior commissures and approximately 8 mm between the A2 and P2 scallops. Adjusting the coaptation depth is not clear in the article.

Furthermore, the authors did not mention the causes of the patient's disease. The artificial chordal replacement can be used in both Barlow's disease and fibroelastic deficiency.[3] Nonetheless, Barlow's disease has distinct features. It generally has complex valve pathology and dysfunction, which is most often multisegmental. Lesions include excessively thick and billowing leaflet segments, chordal elongation and chordal rupture, calcification of the papillary muscles or annulus with chordae restriction, and severe annular dilatation with giant valve size.[4] Patients with fibroelastic deficiency often present with minimal, as opposed to excess, tissue, so extensive leaflet resection or complex leaflet remodeling procedures are rarely indicated.[4] All lesions present should be corrected to store not only valve competency but also a normal valve geometry and satisfactory line closure. Because excess tissue is the hallmark lesion of Barlow's disease, leaflet resection and restoration of normal relationship of the annular dimension are usually central to the surgical strategy.[4,5] The authors state that in the beginning of their experience, large anterior mitral leaflet prolapses had been addressed by triangular resection of some of the excess tissue before parachute implantation. In the perennial concern of simplification and standardization of surgical techniques, they have completely abandoned anterior mitral leaflet triangular resection, and the running suture was used to crimp excessive tissue on the Dacron strip of the parachute.[1] However, crimping may only remove the excess tissue vertically, not horizontally. So performing triangular resection in the anterior leaflet may improve the result in selected cases.

This is an admirable study. The readers thank the authors for sharing their experience and knowledge. The explanation of previously described points will be helpful for better understanding.

Murat Tavlasoglu, MD
Department of Cardiovascular Surgery
Diyarbakir Military Medical Hospital
Diyarbakir, Turkey

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Reply to the Editor:

In this patient series,[1] we report our experience regarding the correction of

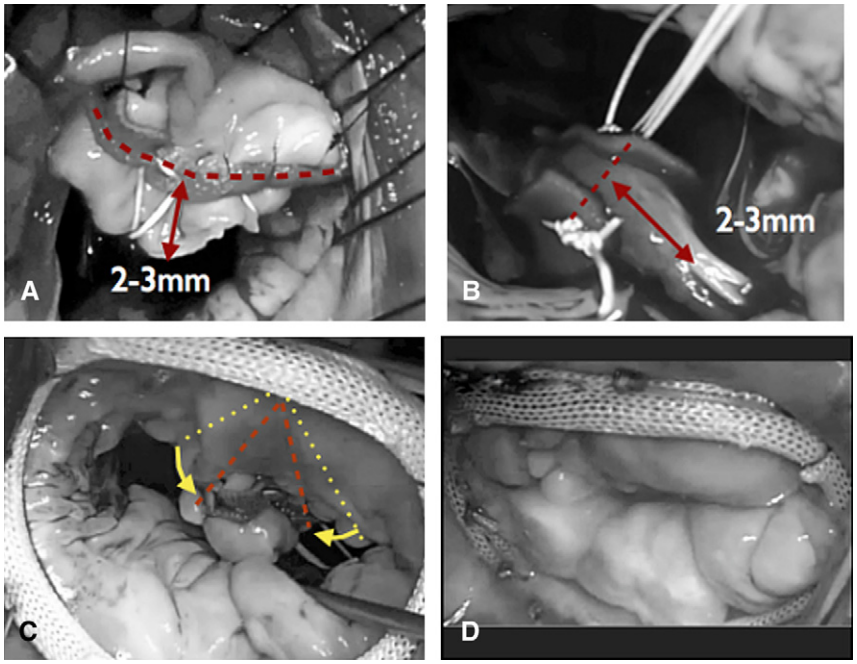

FIGURE 1. A, Superior part of the parachute sutured on the rough zone; the *red dotted line* follows the suture line. B, Insertion of the lower part of the parachute on the papillary muscle. C, Radial displacement of excess tissue; *red dotted lines* show the initial position. *Yellow arrows* show the gathering effect of the suture. *Red lines* show final position with the shortening effect. D, Water test.

anterior mitral leaflet (AML) prolapse in symptomatic patients with severe insufficiency of the mitral valve. A total of 43 of 44 patients were affected by a minor or typical form of Barlow disease (the patient with endocarditis had a redundant valve with a grade II insufficiency) as referred in the operating report and the preoperative echocardiographic description of the valve. Histologic confirmation of myxoid degeneration of the mitral valve was not performed in the patients who had a resection of some of the valvular tissue. However, we point out the mean age of our patients (55 $\pm$ 13 years) and the large annular rings used for the correction (35 $\pm$ 2.9 mm), both of which are in accordance with other publications on patients with so-called "Barlow disease."[2,3]

The problem remains intact for what we call "Barlow disease." Barlow and Pocock[4] validated Reid's theory about midsystolic murmurs and click arising by sudden taunting of lax chordae in 1963 using ventriculography. Widespread use of echocardiography in the 1980s added the echocardiographic criteria of mitral valve prolapse due to Barlow disease.[5] At the same time, Carpentier and colleagues[6] set the criteria for myxoid degeneration recognition based on macroscopic and histologic analysis. However, the current definition of Barlow disease in the literature is based on echocardiographic, macroscopic, or histologic analysis, or a combination of these criteria, which could be misleading.

None of the patients had extensive calcifications of the annular plane or papillary muscles necessitating special management. This could be a bias of selection; patients were referred to surgery earlier. The mean age of our patient was 55 $\pm$ 13 years compared with 67 years in the historic article by Carpentier and colleagues[6] (extremes from 62 to 82 years).

The surgical technique is demonstrated in Figure 1. The anteroposterior correction of tissue excess is demonstrated in Figure 1, *A*. The dotted line follows the suture line of the Dacron cloth; the arrow points out that this is sutured not in the free edge of the leaflet but on the rough zone, which is parallel to the free edge 2 to 3 mm away, at the intended coaptation line. The whole area under the dotted line is going to be the coaptation zone as demonstrated by Figure 1, *D* (the water test demonstrates that the Dacron cloth cannot be seen at the end of the repair). Vertical excess of tissue is corrected by displacement of some of the tissue toward the ventricle, either placing the stitch deeper on the papillary muscle (Figure 1, *B*) or suturing the upper part of the device higher (Figure 1, *A*, *dotted line*).

The lateral correction of tissue excess can be dealt with by gathering the excess tissue on the Dacron cloth (Figure 1, *C*); thus, in our hands triangular resection and gathering have a similar final effect. In Figure 1, *C*, radial displacement of excess tissue is shown by the yellow dotted lines, and the result of the "gathering" toward the middle scallop is shown by the red dotted lines.

Patients with AML prolapse due to Barlow disease were managed using the parachute technique in our study. For those patients with extreme excess of tissue, our initial strategy was triangular resection to eliminate some of the tissue and parachute for treating the prolapse. However, triangular resection was completely abandoned for the most recent patients. As an alternative, we have started to crimp excess tissue on the Dacron cloth, which has further simplified and accelerated the correction of AML prolapse.

Konstantinos Zannis, MD
Laurens Mitchell-Heggs, MD
Département de Pathologie Cardiaque
Institut Mutualiste Montsouris
Paris, France

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THE EFFECT OF INNOMINATE CANNULATION ON CEREBRAL PERFUSION

To the Editor:

We congratulate Shi and colleagues[1] on their study, ''Repair of Stanford Type A Aortic Dissection With Ascending Aorta and Hemiarch Replacement Combined With Stent-Graft Elephant Trunk Technique by Using Innominate Cannulation.'' In this study, the flow in the innominate artery during total body perfusion was toward the arcus aorta. During cerebral perfusion, the flow rate was 8 to 10 mL/(kg · min). Transient neurologic deficit occurred in 10 patients, which indicates that this situation is not a focal event but is related to perfusion defect. Urbanski and associates[2] pointed out that pressure monitoring is mandatory and explained the complications arising from low perfusion. During total body perfusion, the direction of flow is toward the arcus aorta, which causes Venturi effect in the cerebral bed and affects the cerebral perfusion. We conclude that this technique may cause neurologic complications. We think if pressure monitoring were to be instituted, this problem could be predicted.

Sahin Bozok, MD[a]
Mert Kestelli, MD[b]
Hakan Karamustafa, MD[a]
Sedat Ozan Karakisi, MD[a]
[a]*Department of Cardiovascular Surgery*
Rize University Faculty of Medicine
Rize, Turkey
[b]*Department of Cardiovascular Surgery*
İzmir Ataturk Training and Research Hospital
İzmir, Turkey

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Reply to the Editor:

We thank Bozok and colleagues for their insightful comments on the technique of innominate artery cannulation during surgical repair of Stanford type A aortic dissection, as described in our recently published article.[1]

Cannulation of the innominate artery directly[2] or with a side graft[3] has been shown to be a simple and effective alternative in aortic arch surgery. In our series, 10 patients showed transient neurologic dysfunction, and in most cases this was simple confusion lasting less than 48 hours. No permanent neurologic dysfunction occurred. Transient neurologic dysfunction such as confusion is a frequent complication after cardiac surgery, especially among aged patients. We do not think that our results for brain protection are bad. During total body perfusion, the brain can be perfused through the left carotid artery as well as the right carotid artery. Therefore innominate artery cannulation is safe during surgical repair of Stanford A aortic dissection. We also agree, however, that pressure monitoring makes cerebral perfusion more accurate.

Enyi Shi, MD, PhD
Tianxiang Gu, MD, PhD
Department of Cardiac Surgery
First Affiliated Hospital
China Medical University
Shenyang, China

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ALCOHOL AND ADHESIONS

To the Editor:

The recent article by Lassaletta and colleagues[1] fascinated me, just as did